

A LISTING OF THE CLAIMS

1. (Previously Presented) A blood purification device comprising:

a blood circuit having an arterial blood circuit and a venous blood circuit;

a blood pump disposed in said arterial blood circuit;

a blood purifier connected to the blood circuit between said arterial blood circuit and said venous blood circuit, and configured to purify blood flowing in said blood circuit;

a first measuring unit disposed in said arterial blood circuit wherein said first measuring unit measures a first hematocrit value H_{ta} of said arterial blood circuit;

a second measuring unit disposed in said venous blood circuit wherein said second measuring unit measures a second hematocrit value H_{tv} of said venous blood circuit;

a calculating unit to first calculate a measured ratio value and a theoretical ratio value and then compare said measured ratio value to said theoretical ratio value to then calculate an evaluation value used to evaluate operation of the blood purification device; wherein

the first measured hematocrit value H_{ta} is divided by the second hematocrit value H_{tv} to obtain the measured ratio value H_{ta}/H_{tv} ; and a preset water removal rate Q_{uf} is divided by a preset blood flow rate Q_b to obtain the theoretical ratio value Q_{uf}/Q_b ;

an evaluation unit coupled to evaluate whether the evaluation value is larger than a first predetermined acceptable ratio difference; and

a reporting unit configured to report a trouble condition for at least one of said blood pump and said blood purifier when the evaluation value is larger than the a predetermined value.

2. (Previously Presented) The blood purification device of claim 1, wherein:
said blood purifier includes a water removing unit connected to said blood purifier and configured to remove water from blood flowing in said blood purifier; and
said preset blood purifying rate is a preset water removal rate of said water removing unit.

3. (Previously Presented) The blood purification device of claim 2, further comprising:

a substitution fluid supplying unit configured to supply a substitution fluid into said blood circuit, wherein

said calculating unit configured to calculate a theoretical ratio value is based on parameters including a preset substitution fluid supplying rate of said substitution fluid supplying unit and a filtration rate of said blood purifier in addition to said preset blood flow rate and said preset water removal rate, and

said reporting unit is configured to report a trouble condition for at least one of said blood pump, said blood purifier and said substitution fluid supplying unit.

4 -7. (Canceled)

8. (Previously Presented) The blood purification device of claim 1, wherein:

said blood pump is further configured to adjust the preset blood flow rate to an adjusted blood flow rate;

said calculating unit is further configured to calculate a second measurement value and a second theoretical value, said second measurement value referring to a ratio of said blood concentrations measured by said first measuring unit and said second measuring unit while said blood pump is operated at said adjusted blood flow rate and said blood purifier is operated at said preset blood purifying rate, and said second theoretical value referring to a blood concentration ratio obtained by at least one formula based on parameters including said adjusted blood flow rate of said blood pump and said preset blood purifying rate of said blood purifier;

said evaluation unit is further configured to evaluate whether a difference between said second measurement value and said second theoretical value indicates a trouble condition; and

said reporting unit is further configured to report the trouble condition for said blood purifier when said difference between said second measurement value and said second theoretical value is at a first value which is different than a second predetermined acceptable ratio difference, and to report the trouble condition for said blood pump when said difference between said second measurement value and second theoretical value is at a second value which is different than the second predetermined acceptable ratio difference.

9. (Withdrawn) A method for monitoring for a trouble condition associated with a blood purification device, the method comprising the steps of:

disposing a blood pump in an arterial blood circuit of said blood purification device;

connecting a blood purifier between said arterial blood circuit and a venous blood circuit to the blood purification device, said blood purifier being configured to purify blood flowing in said blood circuit;

measuring a blood concentration of said arterial blood circuit;

measuring a blood concentration of said venous blood circuit;

calculating a measurement value and a theoretical value, the measurement value referring to a ratio of said blood concentrations of said arterial blood circuit and said venous blood circuit, and the theoretical value referring to a blood concentration ratio obtained by at least one formula based on parameters including a preset blood flow rate of said blood pump and a preset blood purifying rate of said blood purifier;

evaluating whether a difference between said measurement value and said theoretical value is larger than a predetermined acceptable ratio difference; and

reporting the difference between said measurement value and said theoretical value when that difference is larger than the predetermined acceptable ratio difference, wherein said reporting unit indicates a trouble condition for at least one of said blood pump and said blood purifier.